REMARKS

The present Amendment amends claims 12, 15 and 16, and leaves claims 13 and 14 unchanged. Therefore, the present application has pending claims 12-16.

The Examiner is strongly urged to contact Applicants' Attorney, the undersigned, prior to examination of the present application to discuss the standing issues of the present application based on the present Amendment.

Claims 12-16 stand rejected under 35 USC §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as their invention. Various amendments were made throughout claims 12-16 to bring them into conformity with the requirements of 35 USC §112, second paragraph. Therefore, this rejection with respect to claims 12-16 is overcome and should be withdrawn.

Specifically, amendments were made throughout claims 12-16 to overcome the objections noted by the Examiner in the Office Action.

Claims 12-16 stand rejected under 35 USC §102(b) as being anticipated by Greene (article entitled "Production and Inventory Control Handbook). This rejection is traversed for the following reasons. Applicants submit that the features of the present invention as now recited in claims 12-16 are not taught or suggested by Greene whether taken individually or in combination with any of the other references of record. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to the claims to more clearly describe features of the present invention as recited in the claims. Particularly,

amendments were made to the claims to recite that the present invention is directed to a system of production planning, operable in response to a request for production planning from a terminal operated by a user, for supporting generating at least one of a plurality of plans including a material procurement plan, a production plan, and a transportation plan each used in a production activity beginning with supply of materials up to transportation to a production point and/or to a marketing point by computer.

According to the present invention the system includes memory means that stores various restriction conditions, various management indices and restriction conditional equations relating target values of the management indices to the restriction conditions, each restriction conditional equation being an equation in which an actual value (function) = target value + positive estrangement from the target value (variable) - negative estrangement from the target value (variable). In the present invention the restriction conditions and the restriction conditional equations relating target values of the management indices to the restriction conditions are derived based on various models including models for storage of parts, semi-products and/or products considered to be in a warehouse, flows of storage into the warehouse and of storage delivery from the warehouse.

Further, according to the present invention the system further includes input means that accepts, from the user upon production planning, input of various constants, information which selects restriction conditions and at least two or more of the management indices stored in the memory means, target values of the selected at least two or more of the management indices, a weighting coefficient corresponding to each of the selected at least two or

more of the management indices and flags for indicating whether the actual value of each restriction conditional equation is optimized to be equal to, greater than, or less than the target value of each of the at least two or more of the management indices which have been input by the user.

Still further, according to the present invention the system still further includes calculation process means that reads restriction conditional equations corresponding to the selected at least two or more of the management indices from the memory means, builds the inputted constants and the inputted target values of the selected at least two or more of the management indices into the restriction conditional equations corresponding to the selected at least two or more of the management indices, multiplies each variable that stores a positive estrangement value or a negative estrangement value by the weighting coefficient corresponding to each of the selected at least two or more of the management indices and the flags, composes an objective function for minimizing the sum total of each estrangement value according to the restriction conditional equations corresponding to the selected at least two or more of the management indices read from the memory means, and solves a linear programming problem that optimizes the objective function including calculating each actual value of the selected at least two or more of the management indices according to the restriction conditional equations corresponding to the selected at least two or more of the management indices read from the memory means.

Still further yet, according to the present invention the system still further yet includes output means that displays each calculated actual value of the selected at least two or more of the management indices, which the

calculation process means calculates to solve the linear programming problem, in corresponding relation to the target values which have been inputted by the user, on a display of said terminal in a form of a table, a radar chart or a rod graph.

As per the present invention the input means receives input information from the user that are made of management indices to which the user desires change and adjusted target values of the management indices and the calculation process means remakes restriction conditional equations and the objective function according to the input information, repeats solving the linear programming problem, and calculating the actual values of the selected at least two or more of the management indices for which an evaluation of trade-offs is necessary.

Further, as per the present invention the input means receives inputs from the user of a judgment that all the calculated actual values of the selected at least two or more of the management indices can be allowed, the calculation process means calculates at least one of a materials procurement plan, a production plan of the products and/or the semi-products, and a transportation plan according to the final optimal solutions of the linear programming problem, and the output means outputs said calculated plans.

The basic concept of the present invention it that when a production planner in charge of producing production plans for the production of a particular product from the point of procurement of materials, through production activity, and up to transporting the product to the point of sales, the production planner pays attention to a specific management index in various management indices, composes an objective function for minimizing or

maximizing the specific management index, and solves a linear programming problem that optimizes the objective function. Based on the results from solving the linear programming problem, the production planner generates the production plan.

However, in general, if one management index of plural management indices is minimized or maximized, then trade-offs can occur with the other management indices. These trade-offs can include the deterioration of one or more of the other management indices. To reduce these trade-offs the present invention solves the linear programming problem with two or more management indices which are balanced according to an allowable actual value.

In the present invention, the production planner is enabled to specify the target values of two or more management indices which are desirable by input. Using this and other inputs the system of the present invention builds the target value of each management index into a restriction conditional equation corresponding to management index, composes an objective function for minimizing the sum total of each estrangement value of the restriction conditional equation, and solves a linear programming problem that optimizes the objective function.

The above described features of the present invention now more clearly recited in claims 12-16 are not taught or suggested by any of the references whether said references are taken individually or in combination with each other. Particularly, the above described features of the present invention as now more clearly recited in the claims are not taught or

suggested by Greene whether said reference is taken individually or in combination with any of the other references of record.

Greene teaches the theory of constraints (TOC) which is a systems approach to decision making that is built around the premise that "constraints determine system performance."

Greene teaches, for example, in the section bridging pages 9.6 and 9.7 the five focusing points of TOC including:

> 1. Identify the constraint to the system.
>
> 2. Decide how to exploit the constraint.
>
> 3. Subordinate all else to the decision in step 2.
>
> 4. Elevate the constraint.
>
> 5. If in any previous step, the constraint is broken, go to step 1. Do not *let* inertia become the constraint.
>
> The first and second steps of the five focusing steps link the measurement system to the logistics system. Prioritizing constraint production allows the constraint to make the most money for the organization. The third step, subordinate nonconstraints to the constraint's pace, is accomplished by releasing only enough materials at the gating operations to keep the constraint busy and by prioritizing nonconstraint tasks based on the constraints' needs. While *exploit* (step 2) means get the most from the existing constraint resource, step 4, elevate, means getting more of the constraint resources. Exploit. squeezing the most from the resource, is accomplished prior to spending money to get more of the constraint resource. Step 4 should be conscious and deliberate. Step 5 is a warning to continually check to ensure that the constraint has not shifted to another resource or a policy.

As per Greene TOC provides a new foundation for managerial decision making based on achieving the organizational goal of making more money. The major difference between TOC thinking and traditional thinking lies in TOC's focus on system throughput achieved at the constraint rather than the traditional view of achieving cost savings at all links. Thus, TOC focus allows the organization to coordinate activities across functions to achieve the organizational goal "to make more money now and in the future."

Accordingly, Greene does not teach or suggest a system that provides a user-interface that enables a user to input at least two or more target values of management indices, and solve a linear programming problem that optimizes an objective function based on restriction conditional equations, in consideration of the balance between the calculated actual values of the management indices as in the present invention as recited in the claims.

It should be noted that a word search was conducted in the text of Greene for the term "linear programming." Throughout all 129 pages of Greene only one instance of the use of the term "linear programming" was found in the sentence bridging pages 11.5 and 11.6. This instance is as follows:

> This trial-and-error approach is called *infinite planning* because each trial starts by assuming infinite capacity exists, without regard to the actual capacity of work centers. **Future computing advances will enable operations research techniques such as linear programming to be built into the on-line computations to enable *finite capacity planning.*** While some very small companies have used desktop computers and spreadsheet packages to calculate the MRP and while standard spreadsheets provide an excellent pedagogical approach, essentially all MRP

> users now purchase specialized MRP software, which provides more information with less effort. **[emphasis added]**

Thus, it is quite apparent that Greene does not teach or suggest anything remotely related to a step of solving a linear programming problem that optimizes an objective function based on restriction conditional equations as in the present invention as recited in the claims. Greene merely contemplates what may be possible in the future without suggesting any specific embodiment. Accordingly, it is clear that Greene does not enable the embodiment the Examiner alleges to be taught by Greene.

Being that Greene does not teach or suggest a step of solving a linear programming problem that optimizes an objective function based on restriction conditional equations, it is also apparent that Greene does not teach or suggest restriction conditional equations which relate target values of the management indices to the restriction conditions, each restriction conditional equation being an equation in which an actual value (function) = target value + positive estrangement from the target value (variable) - negative estrangement from the target value (variable) as in the present invention.

Further, being that Greene does not teach or suggest a step of solving a linear programming problem that optimizes an objective function based on restriction conditional equations, it is also further apparent that Greene does not teach or suggest composing an objective function for minimizing the sum total of each estrangement value according to the restriction conditional equations corresponding to the selected at least two or more of the

management indices read from the memory means as in the present invention.

In the present invention upon solving the linear programming problem, the actual values of the selected at least two or more of the management indices, which the calculation process means calculates to solve the linear programming problem based on the restriction conditional equations, are displayed in corresponding relation to the target values, which have been inputted by the user, on a display of the terminal in a form of a table, a radar chart or a rod graph. No such teaching can be found in Greene.

Upon conducting a word search in Greene for the word "display" numerous instances were found where the term "display" was used. Each of said instances found in Greene were reviewed to determine the nature and content of the disclosure. However, none of said instances teach or suggest the display of the actual values of the selected at least two or more of the management indices, which the calculation process means calculates to solve the linear programming problem based on the restriction conditional equations, in corresponding relation to the target values, which have been inputted by the user, on a display of the terminal in a form of a table, a radar chart or a rod graph as in the present invention.

Thus, Greene fails to teach or suggest memory means that stores various restriction conditions, various management indices and restriction conditional equations relating target values of the management indices to the restriction conditions, each restriction conditional equation being an equation in which an actual value (function) = target value + positive estrangement from the target value (variable) - negative estrangement from the target value

(variable). In the present invention the restriction conditions and the restriction conditional equations relating target values of the management indices to the restriction conditions are derived based on various models including models for storage of parts, semi-products and/or products considered to be in a warehouse, flows of storage into the warehouse and of storage delivery from the warehouse as recited in the claims.

Further, Greene fails to teach or suggest input means that accepts, from the user upon production planning, input of various constants, information which selects restriction conditions and at least two or more of the management indices stored in the memory means, target values of the selected at least two or more of the management indices, a weighting coefficient corresponding to each of the selected at least two or more of the management indices and flags for indicating whether the actual value of each restriction conditional equation is optimized to be equal to, greater than, or less than the target value of each of the at least two or more of the management indices which have been input by the user as recited in the claims.

Still further, Greene fails to teach or suggest calculation process means that reads restriction conditional equations corresponding to the selected at least two or more of the management indices from the memory means, builds the inputted constants and the inputted target values of the selected at least two or more of the management indices into the restriction conditional equations corresponding to the selected at least two or more of the management indices, multiplies each variable that stores a positive estrangement value or a negative estrangement value by the weighting

coefficient corresponding to each of the selected at least two or more of the management indices and the flags, composes an objective function for minimizing the sum total of each estrangement value according to the restriction conditional equations corresponding to the selected at least two or more of the management indices read from the memory means, and solves a linear programming problem that optimizes the objective function including calculating each actual value of the selected at least two or more of the management indices according to the restriction conditional equations corresponding to the selected at least two or more of the management indices read from the memory means as recited in the claims.

Still further yet, Greene fails to teach or suggest output means that displays each calculated actual value of the selected at least two or more of the management indices, which the calculation process means calculates to solve the linear programming problem, in corresponding relation to the target values which have been inputted by the user, on a display of said terminal in a form of a table, a radar chart or a rod graph as recited in the claims.

Therefore, Greene fails to teach or suggest the features of the present invention as recited in the claims and as such does not anticipate nor render obvious the claimed invention. Accordingly, reconsideration and withdrawal of the 35 USC §102(b) rejection of claims 12-16 as being unpatentable over Greene is respectfully requested.

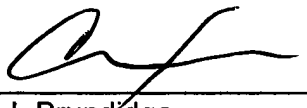
The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references utilized in the rejection of claims 12-16.

In view of the foregoing amendments and remarks, applicants submit that claims 12-16 are in condition for allowance. Accordingly, early allowance of claims 12-16 is respectfully requested.

To the extent necessary, the applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417 (520.39403X00).

Respectfully submitted,

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.



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